



IN THE UNITED STATES PATENT AND  
TRADEMARK OFFICE

Art Unit 2152  
Examiner W. Vaughn, Jr.

RECEIVED

JUN 27 2001

Technology Center 2100

In Re: Dan Kikinis  
Case: P1523CIP  
Serial No.: 08/811,648  
Filed: March 5, 1997  
Subject: Apparatus and Methods for Home Networking

To the Commissioner of Patent and Trademarks  
Washington, D.C. 20231

Dear Sir:

**DECLARATION UNDER 37 C.F.R. Section 1.132**

**I, Michael J. Potel Ph.D., hereby declare that:**

1. I have been a computer engineer with expertise in computer systems for more than thirty years, since 1967.
2. I received a Bachelor of Science degree in mathematics from the University of Michigan in 1970 with distinction and high honors, *Phi Kappa Phi*.

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3. I received a Master of Science degree in Information Sciences from the University of Chicago in 1971.

4. I received a Ph.D. degree in Information Sciences from the University of Chicago in 1977.

5. Since 1967 I have been professionally engaged in the computer field, particularly in software development, and have extensive and in-depth experience in networking systems, including Internet structure, operation, theory and development. I have a fundamental and detailed understanding of how various networks work, including local area networks.

6. I have held the following positions in my long career in computing:

(A) I was a Research Associate, Research Assistant Professor, and Research Associate Professor at the University of Chicago from 1977 to 1985

(B) I was an Engineer, Manager, and Director at Apple Computer from 1985 to 1992

(1) I was a Staff Engineer in the Education Research Group at Apple Computer in 1985

(2) I was Program Manager for Graphics & Sound in the Advanced Development Group at Apple from 1985 to 1987

(3) I was Engineering Manager for Computer Technologies in the Advanced Technologies Group from 1987 to 1988

(4) I was Sr. Director for Systems and Software Engineering at Apple from 1988 to 1989

(5) I was Sr. Director, Engineering, Development Systems from 1989 to 1991

(6) I was Sr. Director, Engineering, Object-Based Systems Division from 1991 to 1992

(C) I was an Officer and employee of Taligent, Inc. from 1992 to 1997

(1) I was Vice President of Engineering in 1992

(2) I was Vice President of Technology Development from 1992 to 1995

(3) I was Vice President and Chief Technology Officer from 1996 to 1997

(D) I founded Wildcrest Associates, a software consultancy and Internet-based products company, in 1997, and have been president of that company from 1997 to the present

#### 7. Memberships, Patents, Publications

Association for Computing Machinery, 1974-present.

Institute of Electrical and Electronics Engineers, 1977-present.

Editorial Board, IEEE Computer Graphics & Applications, 1989-present.

Applications Department Editor, 1994-present.

Advisory Board, Clearwater Networks, Inc. (formerly XStream Logic, Inc.), 1998-present.

Awarded 2 US patents covering Color QuickDraw for the Macintosh.

Consulting: NBC News, Hoffman-LaRoche, Siemens, Apple, Bioscan, Clearwater Networks, Object Technology Licensing Corporation, The Pixel Company, Silicon Valley Expert Witness Group, multiple law firms  
80 publications in graphics, image processing, systems software, object-oriented programming, Internet technologies, user interfaces, scientific computing and applications.

8. I have reviewed in detail the Office Letter mailed by the United States Patent and Trademark Office on December 20, 2000, in the above-referenced case, including the rejections made, the references and portions of the references upon which Examiner William C. Vaughn has relied in making the rejections, and the arguments and reasoning the Examiner has applied in making the rejections.

After my thorough review, I have concluded that there are essential features recited in the independent claims, as I understand them, standing in the case that are not taught in the references, and that the references applied, taken singly or in combination, **do not** teach the inventions as claimed in the case. My reasoning is in the Remarks section below. The particular features to which I refer are the features of the branching nature of the network wiring in the site as recited in the claims, and the modulation done in driving the network, which make it possible for the bridge adapter unit in the present invention to use existing telephone wiring in a home or office to make a workable network, rather than being forced to completely rewire a site, as is clearly necessary in the reference Humpleman.

It is further my understanding that the applicant in the present case has now amended the claims to more particularly point out the patentable subject matter, and I have seen and reviewed the amended claims as well, and compared them to the teachings of the references, in particular the reference Humpleman, and I have reached the same conclusion; that the references **do not** teach the features of the branching network or the modulation of signals onto the network to correct the network signals for the branched nature of the network.

## REMARKS

My remarks and reasoning will be best understood beginning with the two independent claims as amended in an amendment filed with this declaration, and standing for examination in the case at present, which are claims 1 and 7:

Claim 1, as amended, now recites:

*1. (Amended) A networking system for a home or business site, comprising:*

*a bridge adapter unit having an inlet port for receiving public network protocol signals; and*

*a telephone wiring structure in the site, the wiring structure having multiple end points and one or more junctions, and connected at a single point to an outlet port of the bridge adapter unit;*

*characterized in that the bridge adapter unit drives the telephone wiring structure according to a Local Area Network (LAN) protocol, translates the public network protocol signals to the LAN protocol, and modulates the signals in a manner to correct signal variations at the end points due to having multiple end points driven from a single point at the bridge adapter unit.*

I have been specifically asked by the applicant to consider in depth the nature of the wiring structure and the way it is driven with network signals, and whether or not I believe the reference Humpleman, U.S. Patent 5,886,732, teaches or suggests either limitation. Referring to claim 1 as amended and recited above, the portions that I have studied and compared in depth are: "*a telephone wiring structure in the site, the wiring structure having multiple end points and one or more junctions, and connected at a single point to an outlet port of the bridge adapter unit; characterized in that the bridge adapter unit drives the telephone wiring structure according to a Local Area Network (LAN) protocol, translates the public network protocol signals to the LAN protocol, and modulates the signals in a manner to correct signal variations at the end*

*points due to having multiple end points driven from a single point at the bridge adapter unit."*

Referring to the applicant's claims and disclosure, I understand the description of the wiring structure to be that shown in applicant's Fig. 3, which I have included with this declaration as Exhibit I, with some added alliteration for clarity. This Figure clearly shows wiring 302c proceeding from adapter unit 301 at a single point and branching at junction point J1 to provide a second run 302d. It also shows wiring 302b proceeding from the bridge adapter unit and branching at junction point J2 to provide run 302a. It is also clear to me that this is the nature of a telephone wiring structure. In carefully searching reference Humpleman, I find that this reference requires entirely separate runs from an active switching hub 38 (see Fig. 2 and Fig. 3). This hub is an active electronic component, as is quite clear in Humpleman's description from line 44 of col. 5 to line 3 of col. 6. Humpleman's hub cannot be taken to be a junction as shown in applicant's Fig. 3. Further, Humpleman makes numerous references to the necessity of rewiring the site to use the Humpleman system. This is precisely the drawback that I understand the applicant's invention is provided to overcome.

I believe the applicant's characterization of the wiring structure in claim 1 as presently amended clearly differentiates his claims over Humpleman and the prior art generally. The most relevant prior art for such LAN wiring systems is the collision-detection system of Ethernet. The original Ethernet wiring scheme involved a linear coaxial cable. Both the linear topology and better-conditioned electrical properties of coaxial cable were necessary for the collision detection that allowed multiple nodes to coexist along the wire.

More recent Ethernet solutions such as twisted-pair Ethernet require a star topology with dedicated wires to each node from a centralized hub in the manner of Humpleman. In this case, both the one-

wire-run-per-node connections and the specialized circuitry in the hub are required to permit the logical equivalent of collision detection to work. Humpleman characterizes his "switched hub" as a "direct circuit crossbar" to control routing of data to end point devices along dedicated lines. In this way multiple devices can coexist simultaneously in the network by ensuring that their signals never occur simultaneously on any given length of wire. Thus, both forms of prior art teach that restricted topologies with controlled electrical environments are necessary to permit multiple nodes to transmit signals simultaneously in a shared network environment.

What is novel about the applicant's scheme is allowing wiring with one or more junctions and multiple end points, so that signals from multiple devices can coexist on the same wire. How to support such a wiring structure across low-grade wires with no specialized hub-style mediation is not at all obvious in light of prior art solutions. In particular, the practical significance of the applicant's work is that it allows this style of LAN networking to be implemented on pre-existing telephone wiring in the typical home or business without rewiring, resulting in obvious benefits to the consumer.

In the claims as previously standing, it may well not have been clear to the examiner that claiming "telephone wiring" was more than a simple statement of wiring quality. The real significance is that the home or business telephone system's uncontrolled, pre-existing topology and its lack of a centralized control point appropriate for an active electrical component such as a switched hub make it unsuitable for LAN networking solutions as conventionally understood.

The previous claims used the term "*asymmetric* internal telephone wiring" to attempt to characterize this difference, but this possibly ambiguous term may have misled the examiner, since Humpleman uses the term "asymmetric" in the sense of "asymmetric traffic" (different up and down transmission rates) as is conventional in home or small business

Internet services. The explicit characterization of the wiring structure in the current claims should remove any doubt as to what is novel about the applicant's contribution.

The other limitation in applicant's claim that I have studied and compared in detail is the limitation that applicant's bridge unit *modulates the signals in a manner to correct signal variations at the end points due to having multiple end points driven from a single point at the bridge adapter unit*. I have studied Humpleman extensively, and I have not found any such teaching in that reference.

Humpleman uses the term "demodulation" to describe his process of converting signals such as video, audio, computer, and telephony signals from their transmitted form into a form suitable for use by their respective devices. In this sense, as the examiner rightly points out, the signals in Humpleman's system are "modulated". However, as the rewritten claims now make clear, the applicant's modulation of signals is specific to overcoming the problems associated with his special wiring characteristics.

In particular, the telephone wiring structure supported by the applicant causes signals from multiple nodes to overlap in parts of the network. The modulation of the applicant's system is to handle this situation, as the revised claim now states explicitly. The modulation supported by Humpleman is essentially a multiplexing scheme for encoding the signal content of multiple sources. It does not suggest how the problems unique to signal transmission in the applicant's flexible wiring environment could be addressed. Humpleman did not need to teach any form of specialized modulation to enable signal transmission as an inventive element since his restricted network topology permits the use of conventional twisted-pair Ethernet as an implementation (at the price of having to install such a network).



Also, as the examiner points out, the modulation of Humpleman is for the “signals on the *asymmetric star* wiring home network bus”. The “asymmetric star” is Humpleman’s centralized active switching hub with a fan of dedicated wires to each end device. Thus, Humpleman’s system does not anticipate modulation in a “telephone wiring structure...having multiple end points driven from a single point at the bridge adapter unit” as is now explicit in the applicant’s amended claims.

It is my understanding that a valid rejection requires that the recited limitations in a claim must be shown to have been taught in the art. I am, of course, aware that every home and office has an existing telephone wiring structure of the nature claimed by the applicant in this case. There is nowhere, to my knowledge, however, a teaching in the art to drive this structure in a manner that provides a home or business networking system, without having to do any rewiring of the site. Surely that is a valuable and unique addition to the art.

Claim 7, as amended, now recites:

7. (Amended) *A method for implementing a networking system, comprising the steps of:*

*(a) delivering public network protocol signals to the level of a home or business site;*

*(b) installing a bridge adapter unit having an inlet port for the public network protocol signals at the site;*

*(c) connecting a telephone wiring structure having multiple end points and one or more junctions, at a single point to an outlet port of the bridge adapter unit;*

*(d) driving the telephone wiring structure according to a Local Area Network (LAN) protocol by the bridge adapter unit, translating the public network protocol signals into the LAN protocol; and*

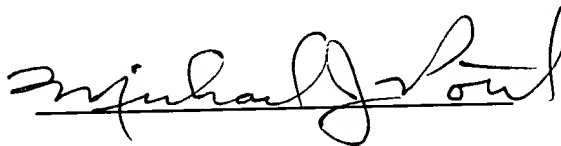
*(e) modulating the signals in a manner to correct variations at the end points due to having multiple end points driven from the single point at the bridge adapter unit.*

Claim 7 is a method claim which relies on the same features as recited in the apparatus claim 1, and my observations above relative to claim 1 apply to claim 7 as well.

Finally, and in summary, it is quite clear to me, in light of my intimate knowledge of the principles and functionality involved in this art, and my many years of professional experience, that the references taken either singly or together, as thus far cited in the above-referenced case, do not anticipate or suggest the inventions recited in the claims.

9. I further declare that the above statements are made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-identified application or any patent issuing thereon.

Respectfully Submitted,  
Michael J. Potel, Ph.D.

A handwritten signature in black ink, appearing to read "Michael J. Potel", written over a horizontal line.

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